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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,028	12/30/2005	Sang-Ho Shin	HLE-0023	8513
23413 7590 03/04/2009 CANTOR COLBURN, LLP 20 Church Street 22nd Floor Hartford, CT 06103				
EXAMINER VO, HAI				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
03/04/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com

### Office Action Summary

**Application No.**

10/563,028

**Applicant(s)**

SHIN, SANG-HO

**Examiner**

Hai Vo

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 and 14-19 is/are pending in the application.
- 4a) Of the above claim(s) 17-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 14-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

1. The art rejections have been withdrawn in view of the present amendment and response (see pages 6 and 9 of Applicant's response filed 11/26/2008). None of the applied references teach or suggest the silicon carbide in the range instantly claimed. In addition, Hoda is improperly combinable with Kurz because Hoda teaches the undesirability of pore formation in the vitrified matrix as pointed out by Applicants. There is no guidance that the modified bentonite of Hoda would be successful in the application of Kurz. However, new grounds of rejections are made in view of newly discovered references to Satoh et al (US 4,758,538) and Cowan, Jr. et al (US 3,666,506).

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
3. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cowan, Jr. et al (US 3,666,506) in view of Leach (US 3,762,935) and Satoh et al (US 4,758,538). Cowan teaches a porous ceramic panel prepared from a ceramic composition comprising an expandable clay mineral and a foaming agent present in an amount of 0.1 to 2 wt% (column 6, lines 15-20). The clay composition is consisting essentially of 50-80% SiO<sub>2</sub>, 10-25% Al<sub>2</sub>O<sub>3</sub>, 10-20% R<sub>2</sub>O and 0-10% impurities (column 3, lines 45-50, table 1). Impurities such as CaO, MgO, BaO and Fe<sub>2</sub>O<sub>3</sub> should not exceed about 10% (column 2, lines 65-

67). The porous ceramic panel has a closed cell structure (column 8, lines 1-5). The ceramic panel has a density of 0.15 to 0.65 g/cc. Cowan does not teach the ceramic composition comprising a glass. Leach, however, teaches a foamed ceramic material comprising glass frits in an amount of 1wt% to 20 wt% (column 3, lines 65-67). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add glass frits into the ceramic composition motivated by the desire to facilitate the growth of the individual foam cells which remain unconnected, thereby improving the heat insulating properties of the porous ceramic panels.

Cowan does not specifically disclose the pore forming agent such as SiC present in an amount of 1 to 5 wt%. Satoh, however, teaches the use of SiC as a pore-forming agent for forming a foamed ceramic (abstract). The SiC may amount from 0.1 to 1 wt%. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the SiC into the ceramic composition in an amount as taught by Satoh motivated by the desire to provide the porous ceramic panel having a uniform pore distribution and high mechanical strength.

Cowan as modified by Leach/Satoh uses the same ceramic composition and the same technique for forming a ceramic panel as Applicant, i.e. firing and foaming the clay composition at a high temperature. The resulting ceramic panel has a closed cell structure, a density within the claimed range. Therefore, it is not seen that the pore density, pore volume, water permeability, flame retardant

property, flexural strength, bending strength, far infrared radiation rate, far infrared radiation energy, thermal conductivity would be inherently present as like material has like property. This is in line with *In re Spada*, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties.

4. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cowan, Jr. et al (US 3,666,506) in view of Leach (US 3,762,935) and Satoh et al (US 4,758,538), as applied to claim 1 above, further in view of Bergh (US 3,727,838). Cowan does not specifically disclose the ceramic panel having a sandwich structure by attaching steel plated to both top and bottom sides of the ceramic panel. Bergh, however, teaches an insulating rail joint endpost comprising an insulating ceramic material sandwiching between two steel plates via an epoxy adhesive (abstract, claim 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have two steel plates bonded to each side of the insulating ceramic material by an epoxy adhesive because such is an intended use of the material and Bergh provides necessary details to practice the invention of Cowan.
5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cowan, Jr. et al (US 3,666,506) in view of Leach (US 3,762,935) and Satoh et al (US 4,758,538), as applied to claim 1 above, further in view of RO 114015. Cowan does not specifically disclose the ceramic panel having a protrusion on one side and a groove on the opposite side. RO'015 discloses a ceramic wall panel

having a protrusion on one side and a groove on the opposite side so that two adjacent ceramic panels could be connected together by coupling between the protrusion and the groove. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form a ceramic wall panel having a protrusion on one side and a groove on the opposite side so that two adjacent ceramic panels could be connected together by coupling between the protrusion and the groove.

6. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurz et al (US 4,071,369) in view of Leach (US 3,762,935), Satoh et al (US 4,758,538), and Cowan, Jr. et al (US 3,666,506). Kurz teaches a porous ceramic panel prepared from a ceramic composition comprising an expandable clay mineral and silicon carbide in an amount of 0.2 wt% (example 2). The porous ceramic panel has a closed cell structure (column 6, lines 20-25). The ceramic panel has a density of 0.4 to 0.5 g/cc. Kurz does not teach the ceramic composition comprising a glass. Leach, however, teaches a foamed ceramic material comprising glass frits in an amount of 1wt% to 20 wt% (column 3, lines 65-67). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add glass frits into the ceramic composition motivated by the desire to facilitate the growth of the individual foam cells which remain unconnected, thereby improving the heat insulating properties of the porous ceramic panels.

Kurz does not specifically disclose the SiC pore forming agent present in an amount of 1 to 5 wt%. Satoh, however, teaches the use of SiC as a pore-forming agent for forming a foamed ceramic (abstract). The SiC may amount from 0.1 to 1 wt%. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the SiC into the ceramic composition in an amount as taught by Satoh motivated by the desire to provide the porous ceramic panel with a uniform pore distribution and high mechanical strenght.

Kurz teaches the method of his invention would work with almost all types of known clays (column 3, lines 54-56). Kurz does not specifically disclose the clay composition as presently claimed. Cowan, however, teaches the foam ceramic body having uniform closed cell structure with a density of 0.4 g/cc (abstract). The foam ceramic body comprises a clay composition consisting essentially of 50-80% SiO<sub>2</sub>, 10-25% Al<sub>2</sub>O<sub>3</sub>, 10-20% R<sub>2</sub>O and 0-10% impurities (column 3, lines 45-50, table 1). Impurities such as CaO, MgO, BaO and Fe<sub>2</sub>O<sub>3</sub> should not exceed about 10% (column 2, lines 65-67). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the clay with the composition as taught by Cowan for the expandable clay mineral because such is an intended use of the material and Cowan provides necessary details to practice the invention of Kurz.

Kurz as modified by Leach/Satoh/Cowan uses the same ceramic composition and the same technique for forming a ceramic panel as Applicant,

i.e. firing and foaming the clay composition at a temperature of from 1100°C to 1200°C (example 1). The resulting ceramic panel has a closed cell structure, a density within the claimed range. Therefore, it is not seen that the pore density, pore volume, water permeability, flame retardant property, flexural strength, bending strength, far infrared radiation rate, far infrared radiation energy, thermal conductivity would be inherently present as like material has like property. This is in line with *In re Spada*, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties.

7. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurz et al (US 4,071,369) in view of Leach (US 3,762,935), Satoh et al (US 4,758,538), and Cowan, Jr. et al (US 3,666,506), as applied to claim 1 above, further in view of Bergh (US 3,727,838). Kurz does not specifically disclose the ceramic panel having a sandwich structure by attaching steel plated to both top and bottom sides of the ceramic panel. Bergh, however, teaches an insulating rail joint endpost comprising an insulating ceramic material sandwiching between two steel plates via an epoxy adhesive (abstract, claim 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have two steel plates bonded to each side of the insulating ceramic material by an epoxy adhesive because such is an intended use of the material and Bergh provides necessary details to practice the invention of Kurz.
8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurz et al (US 4,071,369) in view of Leach (US 3,762,935), Satoh et al (US 4,758,538),



and Cowan, Jr. et al (US 3,666,506), as applied to claim 1 above, further in view of RO 114015. Kurz does not specifically disclose the ceramic panel having a protrusion on one side and a groove on the opposite side. RO'015 discloses a ceramic wall panel having a protrusion on one side and a groove on the opposite side so that two adjacent ceramic panels could be connected together by coupling between the protrusion and the groove. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form a ceramic wall panel having a protrusion on one side and a groove on the opposite side so that two adjacent ceramic panels could be connected together by coupling between the protrusion and the groove.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-1485. The examiner can normally be reached on Monday through Thursday, from 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hai Vo/

Primary Examiner, Art Unit 1794